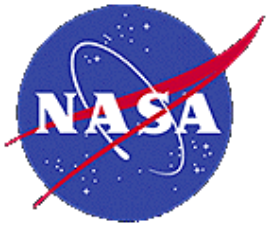

NASA's R & A Program Including the Theory, GO & Archives

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Overview of APD Research Mechanisms

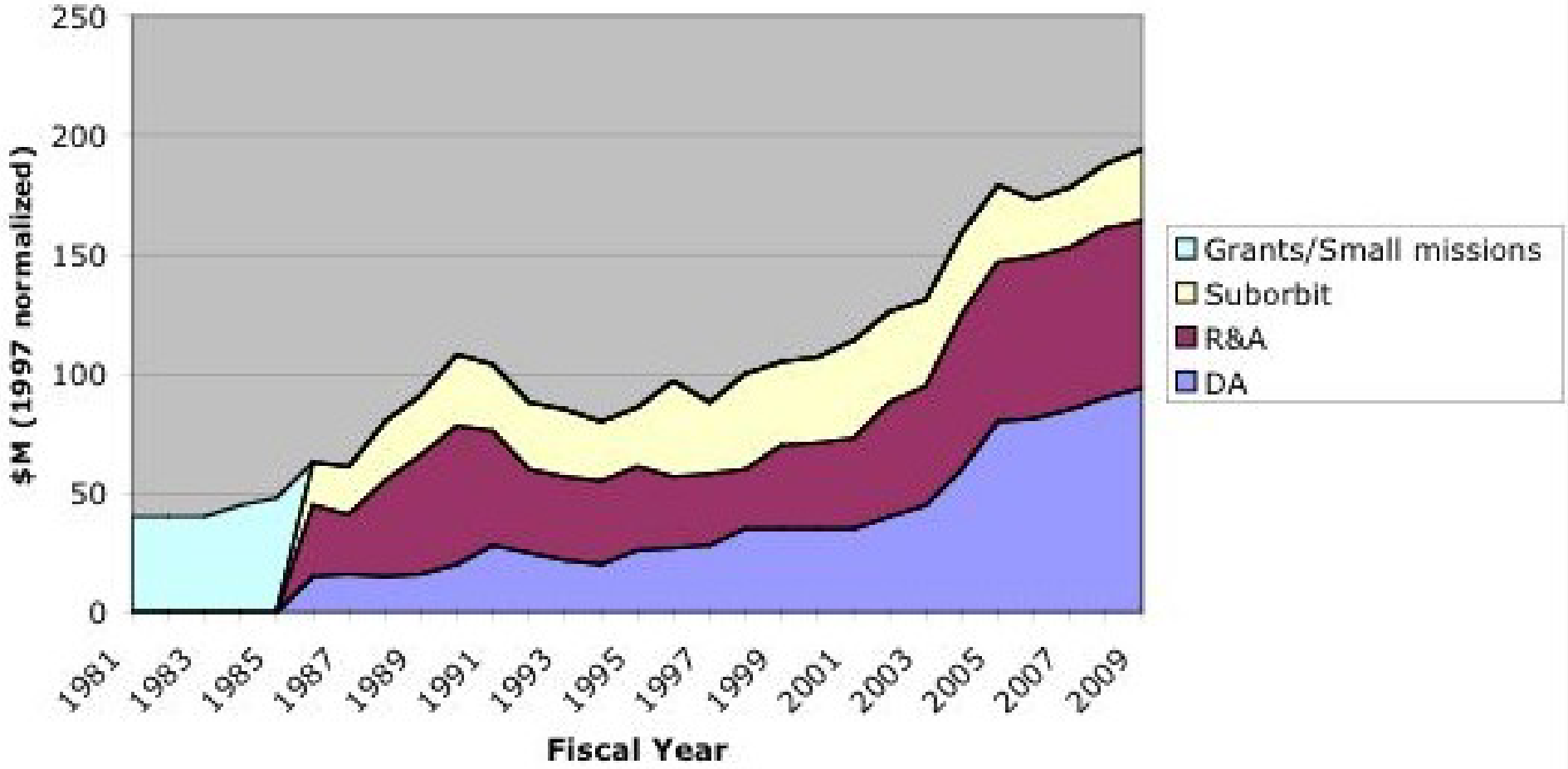
NASA's R & A program consists of a number of diverse elements, competitively peer reviewed, and solicited in a number of ways. Each element maps, more or less, into the Agency's Strategic Plan and is reviewed for relevance to that plan every 3 years through the "roadmapping" process. We are currently gearing up for the next cycle of roadmapping exercises this spring.

The talk is a precis of the current scope of the R & A program.

Elements

- There are 3 main elements to R & A:
  - "Traditional" R & A (lab astro, instrument development, detectors);
  - Data analysis, using some new, but mainly archival data (this includes theory);
  - GO programs -- funding to analyze data taken on NASA missions when time is awarded.

R & A Budget History



Traditional R & A

- These elements are broken down to cover all aspects of the 2 theme areas: Origins and SEU:
  - UV/Optical instruments
  - IR/Sub-mm instruments
  - Origins of the Solar System
  - Observatory support (*i.e.* Keck)

Traditional R & A

- High Energy Astrophysics
- Cosmic ray physics
- Balloon program
- Research carriers (sounding rockets)

Data Analysis & Theory

- There are 3 program elements to this area:
  - ADP/LTSA (largest of the data analysis programs, solicits proposals from 1-5 years);
  - ATP, the theory program, solicits proposals from 1-3 years;
  - BEFS, theory as it relates to fundamental and gravitational physics that will support the Beyond Einstein program (*i.e.* LISA)

Schedule: ROSS-04

- Applied Information Systems (ROSS-03) Mar 10
- Astronomy and Physics Research and Analysis April 16
- Cosmochemistry May 21
- Origins of Solar Systems May 28
- Terrestrial Planet Finder Foundation Science May 28
- Astrophysics Data Analysis June 25
- Long-Term Space Astrophysics June 25
- Astrophysics Theory August 27
- Beyond Einstein Foundation Science August 27

GO programs

- APD policy is to support users of NASA space assets in the analysis of their data when science time is awarded *via* the appropriate TAC.
- This is done on the 3 Great Observatories and on those other operating missions which have a Guest Investigator program.

GO programs

- Mission set:
  - Hubble ST, Chandra XO, Spitzer ST
  - FUSE, Rossi-XTE, GALEX, Integral, XMM-Newton (latter 2 are for US observers only)
  - *Future*: Swift, Astro-E2, SOFIA, GLAST, Kepler, JWST, Hershel

Schedule: GO Programs

- Hubble – Cycle 13 Jan 23
- Spitzer – Cycle 1 Feb 14
- Chandra – Cycle 6 Mar 12
- GALEX – Cycle 1 (ROSS) April16
- Astro-E2 – Cycle 1 (ROSS) Aug 18
- RXTE – Cycle 10 (ROSS) September 10
- FUSE – Cycle 6 (ROSS) September 17
- SWIFT – Cycle 2 (ROSS) March 11, 2005

- INTEGRAL – Cycle 3 (ESA) ~ Sep
- XMM-Newton – Cycle 4 (ESA) ~ Nov

Funding Levels

Type	FY04 level ($M)
Traditional (Origins)	
UV/Opt	9
IR/Submm	12
Orig. Sol. Sys.	4
Obs. Supp.	3
Traditional (SEU)	
HEA	15
Cosmic Ray	8
Res. Carriers	3
Archival:	
ADP/LTSA	16
ATP	8
BEFS	4

Funding Levels

Type	**FY04 level ($M)**
GO grants from missions	
HST	28
CXO	15
SST	23
GALEX	2
FUSE	4
RXTE	1
Integral	4
XMM-Newton	5
Total:	**164**

Theory Program: A (Very) Short History of Funding

APD Theory Support

- From the Decadal Survey of 2000, stress was laid on the need for higher funding levels in astrophysical theory.
- APD responded by increasing the amount of funding to the ATP.
  - New lines of theory funding were initiated in the HST, CXO and SST GO lines.
  - Beyond Einstein initiative has a theory line.

Theory Funding History

- FY02: $ 7.3M (ATP)
- FY03: $ 8.2M (ATP)
- FY04: $ ~13M (ATP+BEFS+GO)*

*Includes Full costing for NASA Civil Servants

Theory in GO Missions

The 3 additional sources for theory support in APD:

1) HST Theory grants (FY03) $700k
2) CXO Theory grants (FY03) $680k
3) Spitzer will have a theory program of comparable size

ATP02 & ATP/BEFS03

ATP02

- AGN&GRB: $367k
- Grav/Fund: $818k
- ISM: $257k
- Lrg Scl Struct: $451k
- Normal Gal: $211k
- Post MS: $446k
- Star Form: $214k

ATP/BEFS03*

- AGN&GRB: $350k
- Cosmology: $675k
- Fundamental: $672k
- Gravity: $667k
- ISM: $388k
- Normal Gal: $195k
- Post MS: $273k
- Star Form: $268k

* Includes Full costing for NASA CSs

Funding Levels

NASA archive funding levels in FY04 (in $M)

LAMBDA	0.9
IRSA	1.2 (Does not include funding for Spitzer archive)
HST + MAST	0.9 MAST only. HST costs difficult to deconvolve from STScI costs)
HEASARC	2.8
CXC	(Archive costs hard to deconvolve from overall CXC costs)
NSSDC	6.3
MSC	7.5
ADS	1.2
IRSA/NED	1.3